CLAIMS:

1. A variable displacement compressor, comprising:

a compressor housing;

a cylinder block having a cylinder bore;

a single-headed piston housed in the cylinder bore;

a drive shaft, which is rotatably supported by the compressor housing;

a lug plate, which is attached to the drive shaft to rotate integrally with the drive shaft;

a cam plate, which is supported by the drive shaft to slide along and incline with respect to the drive shaft;

a hinge mechanism located between the lug plate and the cam plate, wherein rotation of the drive shaft is converted into reciprocation of the piston with the lug plate, the hinge mechanism, and the cam plate, wherein the hinge mechanism guides the cam plate such that the cam plate slides along the drive shaft while being inclined, and a displacement of the compressor is changed, accordingly; and

an urging spring for urging the cam plate in a direction increasing the inclination angle of the cam plate,

wherein the drive shaft has a step formed directly on a part of the drive shaft that is between the cam plate and the cylinder block, wherein the step includes a seat surface that intersects an axis of the drive shaft and faces the cam plate, and wherein the urging spring is located between the seat surface and the camp plate.

2. The compressor according to claim 1, wherein the drive shaft has a small diameter portion and a large diameter portion, and wherein the step is formed between the small diameter portion and the large diameter portion.

3. The compressor according to claim 1, wherein the drive shaft has a drive shaft main body and a cylindrical bearing

portion, which are continuously arranged along the axis of the drive shaft,

wherein the cylinder block has a wall surface that defines an accommodation space for accommodating the bearing portion, wherein the bearing portion includes an outer circumferential surface supported by the wall surface, and wherein the wall surface and the outer circumferential surface form a slide bearing.

4. The compressor according to claim 3, wherein the drive shaft main body has an end portion that is adjacent to the bearing portion, and wherein the diameter of the bearing portion is greater than that of the end portion of the drive shaft main body, so that the step is formed between the bearing portion and the drive shaft main body.

5. The compressor according to claim 4, wherein an end face of the bearing portion functions as the seat surface.

6. The compressor according to claim 3,

wherein the drive shaft main body and the bearing portion are separately formed, and wherein the bearing portion is assembled with the drive shaft main body.

7. The compressor according to claim 3, further comprising:

a suction pressure zone; and

a gas passage formed between the cylinder bore and the suction pressure zone,

wherein the bearing portion functions as a rotary valve that intermittently opens and closes the gas passage in synchronization with rotation of the drive shaft.

8. The compressor according to claim 1, wherein the urging spring comprises a coil spring, and wherein the height

of the step in a radial direction of the drive shaft is greater than the diameter of a wire forming the coil spring.

9. A variable displacement compressor, comprising:

a compressor housing;

a cylinder block having a cylinder bore;

a single-headed piston housed in the cylinder bore;

a drive shaft, which is rotatably supported by the compressor housing;

a lug plate, which is attached to the drive shaft to rotate integrally with the drive shaft;

a cam plate, which is supported by the drive shaft to slide along and incline with respect to the drive shaft; and

a hinge mechanism located between the lug plate and the cam plate, wherein rotation of the drive shaft is converted into reciprocation of the piston with the lug plate, the hinge mechanism, and the cam plate, wherein the hinge mechanism guides the cam plate such that the cam plate slides along the drive shaft while being inclined, and a displacement of the compressor is changed, accordingly,

wherein the drive shaft has a step formed directly on a part of the drive shaft that is between the cam plate and the cylinder block, wherein the step includes a seat surface that intersects an axis of the drive shaft and faces the cam plate, and wherein, when the cam plate contacts the seat surface, an minimum inclination angle of the cam plate is defined.

10. The compressor according to claim 9, wherein the drive shaft has a small diameter portion and a large diameter portion, and wherein the step is formed between the small diameter portion and the large diameter portion.

11. The compressor according to claim 9, wherein the drive shaft has a drive shaft main body and a cylindrical bearing, which are continuously arranged along the axis of the

drive shaft,

wherein the cylinder block has a wall surface that defines an accommodation space for accommodating the bearing portion, wherein the bearing portion includes an outer circumferential surface supported by the wall surface, and wherein the wall surface and the outer circumferential surface form a slide bearing.

12. The compressor according to claim 11, wherein the drive shaft main body has an end portion that is adjacent to the bearing portion, and wherein the diameter of the bearing portion is greater than that of the end portion of the drive shaft main body, so that the step is formed between the bearing portion and the drive shaft main body.

13. The compressor according to claim 12, wherein an end face of the bearing functions as the seat surface.

14. The compressor according to claim 11,

wherein the drive shaft main body and the bearing portion are separately formed, and wherein the bearing portion is assembled with the drive shaft main body.

15. The compressor according to claim 11, further comprising:

a suction pressure zone; and

a gas passage formed between the cylinder bore and the suction pressure zone,

wherein the bearing portion functions as a rotary valve that intermittently opens and closes the gas passage in synchronization with rotation of the drive shaft.